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COUNTRY ANALYSIS BRIEFS

Ecuador

Last Updated: March 2006

Background

Ecuador is one of Latin America's largest crude oil exporters.

Ecuador has a small economy, with a 2005 gross domestic product (GDP) of $32 billion. Ecuador's economic growth slowed from 6.9 percent in 2004 to 2.5 percent in 2005. The oil sector dominates the Ecuadorian economy, accounting for 40 percent of export earnings and one-third of all tax revenues. Other important export industries include bananas and cut flowers. Inflation, once a serious problem for the Ecuadorian economy, has declined from an annual rate of 96.1 percent in 2000 to 2.4 percent in 2005. The principal cause of this reduction was the replacement of Ecuador's old currency, the sucre, with the U.S. dollar in 2000. While limiting its ability to formulate its own monetary policy, Ecuador has benefited from the low inflation and stability of the dollar.

Oil

Ecuador is the second-largest South American supplier of crude oil to the United States.

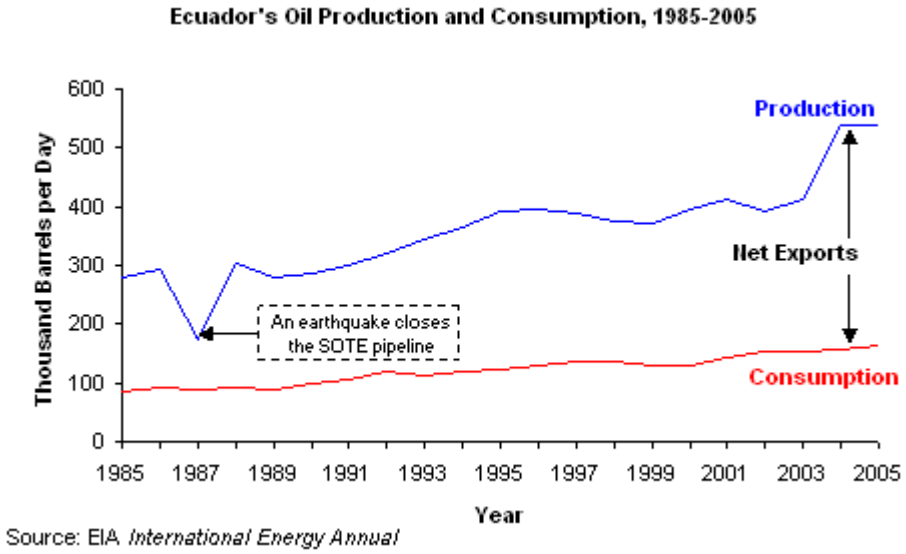
According to *Oil and Gas Journal*, Ecuador held proven oil reserves of 4.6 billion barrels in January 2006, the third largest in South America. The country is the fifth-largest producer of oil in South America; in 2005, Ecuador produced 538,000 barrels per day (bbl/d) of oil, of which almost all was crude oil. Of this production, Ecuador consumed 162,000 bbl/d. Crude oil production has risen sizably in recent years, though 2005 production was mostly flat compared to 2004.

Ecuador is a significant oil exporter, mostly to the United States. Ecuador sends over 50 percent of its oil exports to the U.S., the remainder split between Latin America and Asia. During the first eleven months of 2005, Ecuador exported an average of 269,900 bbl/d of crude oil to the United States, some 2.7 percent of U.S. total crude oil imports during that period. Ecuador is the second-largest source of crude oil imports from South America, after Venezuela.

Sector Organization

Petroecuador, owned by the Ecuadorian government, was responsible for 38 percent of the country's crude oil production during the first half of 2005. The most important private oil

companies are foreign-owned, with the largest being Occidental Petroleum. During the first half of 2005, Occidental production in Ecuador represented 14 percent of the country's total crude oil production. In September 2005, EnCana announced that it had sold its Ecuadorian production and pipeline assets, which included 75,000 bbl/d of crude oil production capacity and a 36 percent stake in the OCP pipeline (see below), to Andes Petroleum, a consortium headed by the Chinese National Petroleum Corporation (CNPC). Other important foreign oil producers include Repsol-YPF and Agip.



Source: EIA *International Energy Annual*

While Ecuador's crude oil production increased 31 percent from 2001 to 2005, Petroecuador's share of national crude oil output declined from 56 percent to 38 percent. The Ecuadorian government announced in September 2005 that it would renegotiate all contracts with foreign oil producers. President Alfredo Palacio has stated that he wants the state's share of production in private projects to increase to 50 percent from the current 20 percent. The Energy Ministry hopes to have all negotiations completed by the middle of 2006. The move follows a recent trend in South America, with both Venezuela and Bolivia renegotiating production agreements with private operators in order to take advantage of higher world oil prices.

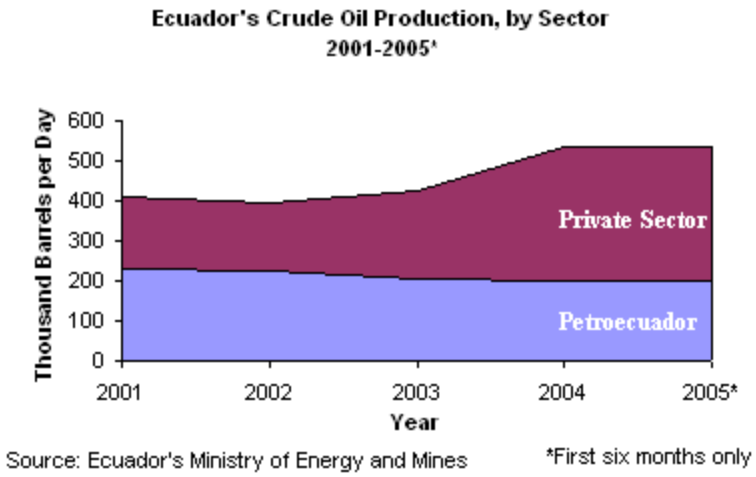
Exploration and Production

Ecuador's most productive oil fields are located in the northeast corner of the country. The largest oil field is Petroecuador's Shushufindi, which produced 51,600 bbl/d during the first six months of 2005. Other major oil fields include Eden Yutui (Occidental), Dorine (Andes), and Sacha (Petroecuador). Ecuador produces two varieties of crude oil: Oriente and Napo. Napo is a heavy, sour crude, with a 19.2° API and 2 percent sulfur c ontent, while Oriente is a medium-heavy, medium-sour crude, with a 28.8° API and 1 percent s ulfur content.

Future increases in Ecuador's crude oil production will likely come from development of the Ishpingo-Tapococha-Tiputini (ITT) block. The government plans to open ITT to foreign producers through a licensing round in the near future. The IIT block, located in Ecuador's Amazon region, contains an estimated 900 million barrels of proven reserves, with potential recoverable reserves as high as 1.3 billion barrels. Analysts predict that, if fully developed, the block could produce at least 190,000 bbl/d. However, the ITT block reportedly contains a variety of crude oil even heavier than Napo, so any oil producer would need to blend the crude with lighter hydrocarbons before shipping it via Ecuador's pipeline network.

Factors Affecting Oil Production

Several exceptional factors affect oil production in Ecuador. First, many private companies have clashed with the government over contract and tax issues, especially dealing with rebates of the value-added tax (VAT) paid by oil exporters. Both Occidental Petroleum and EnCana have taken legal action against the Ecuadorian government over VAT rebates. In 2004, an arbitration panel awarded $75 million to Occidental in VAT reimbursements, an award the Ecuadorian government disputes.



Second, there has been significant opposition to oil development by indigenous groups. These groups have repeatedly obstructed exploration and production activities in Ecuador's eastern region. The IIT block, which sits deep in the Amazon region, will likely face particularly fierce resistance from these groups. Indigenous activists have also brought a lawsuit against ChevronTexaco over Texaco's former oil operations in Ecuador. The suit is still in litigation, but a resolution of the case in favor of indigenous activists could introduce additional risk for foreign oil operators.

Protests against the oil industry have had a direct impact upon the country's crude production. In August 2005, protest groups shut down Petroecuador's crude oil production for a week, forcing the company to declare *force majeure* on its crude exports. In February 2006, Petroecuador shut down the SOTE pipeline (see below) for several days, after protesters occupied a pumping stations.

Pipelines

Ecuador has two major oil pipeline systems. The first is the *Sistema Oleducto Trans-Ecuatoriano* (SOTE), built in the early 1970s. The 310-mile, 400,000-bbl/d SOTE runs from Lago Agrio to the Balao oil terminal on the Pacific coast. SOTE has suffered from natural disasters that severely disrupted Ecuador's oil production. In March 2004, a landside halted oil shipments through SOTE, prompting Petroecuador to declare *force majeure* on its export contracts. In 1987, an earthquake destroyed a large section of SOTE, reducing Ecuador's oil production for that year by over 50 percent.

The second oil pipeline is the *Oleducto de Crudos Pesados* (OCP). The 300-mile, 450,000-bbl/d OCP mostly parallels the route of the SOTE. The OCP began operations in September 2003, and its completion immediately doubled Ecuador's oil pipeline capacity. The completion of the OCP pipeline led to a sharp increase in Ecuador's crude oil production, as private companies are no longer constrained by the capacity limits of the SOTE. Use of the OCP system is mostly confined to private oil producers, with Petroecuador relying upon SOTE.

Ecuador utilizes one international pipeline, the TransAndino. The 50,000-bbl/d pipeline connects Ecuador's oil fields with the Colombian port of Tumaco.

Downstream Activities

Ecuador has three oil refineries, with a combined capacity of 176,000 bbl/d. The largest refinery in Ecuador is Esmeraldas (110,000 bbl/d), located on the Pacific coast. Ecuador is a net importer of refined oil products, and the government has made it a priority to increase domestic refining capacity by improving the efficiency of existing plants and building a fourth refinery with a planned capacity of 200,000 bbl/d. There has also been some talk of Ecuador shipping crude oil to Venezuela for processing, then re-importing the refined products.

Natural Gas

Ecuador has relatively small

According to *OGJ*, Ecuador had 345 billion cubic feet (Bcf) of natural gas reserves as of January

proven natural gas reserves.

2006. There is negligible domestic demand or support infrastructure for natural gas. The only large-scale natural gas project in Ecuador is the Amistad field, located in the Gulf of Guayaquil. Noble Energy is the operator of the field, which has a production capacity of 8 Bcf per year. All of Amistad's natural gas production flows to Noble's Machala facility, a 130-megawatt (MW), onshore, gas-fired power plant that supplies electricity to the Guayaquil region. Ecuador's oil industry also flares a significant amount of natural gas from its operations, as there are no systems in place to capture it.

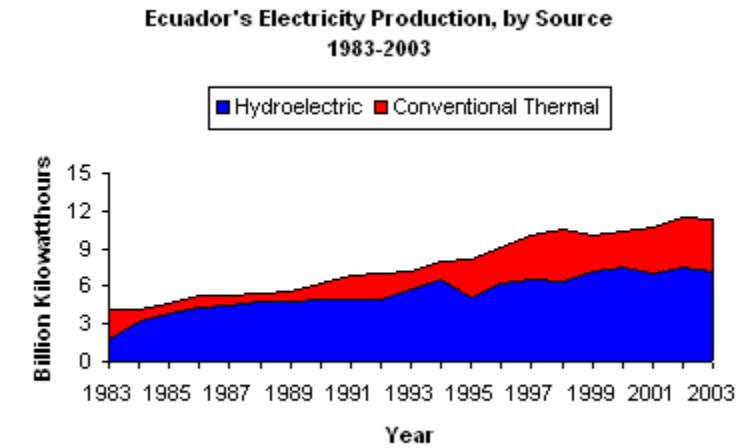
Electricity

A single hydroelectric dam, Paute, represents one-third of Ecuador's total electricity generating capacity.

Ecuador produced 11.3 billion kilowatthours (Bkwh) of electricity and consumed 10.6 Bkwh in 2003. About 63 percent of Ecuador's electricity production comes from hydroelectricity, with the balance supplied by conventional thermal plants. While Ecuador has a net electricity surplus, it often faces supply shortages during the October-March dry season, when hydroelectricity output declines. To make up for these shortfalls, Ecuador imports electricity from Colombia. There are plans to build new electricity connections to Peru, which would further allow Ecuador to alleviate its seasonal power shortages and open additional markets for electricity exports.

Sector Organization

In 1999, the Ecuadorian government broke apart INECEL, the former, state-owned electricity monopoly that had controlled the generation, transmission, and distribution sectors. Six state-owned companies now dominate the country's generation sector, though there are important private producers supplying customers in the urban areas surrounding Quito and Guayaquil. A single, state-owned company, Transelectric, controls the transmission system. State-owned companies control most of the distribution sector, with the exception of Guayaquil, which is served by a municipal-owned distributor. The Ecuadorian government has repeatedly tried to privatize the distribution sector, though each attempt has failed due to resistance from Congress, protests by labor unions and rural activists, and lack of interest from private investors.



Source: EIA *International Energy Annual*

In late 2005, the Ecuadorian government announced new measures to promote the construction of new independent power projects (IPP) to increase the country's generating capacity. The new policy excludes IPPs from all taxes and import tariffs for 12 years and allows them to sell surplus generation into the national grid or directory to private consumers.

Hydroelectricity

The 1,100-MW Paute plant, located in eastern Ecuador, represents over 60 percent of the country's hydroelectric generating capacity. In 2003, the state-owned operator of the Paute plant, Hidropaute, won a tender to build the Mazar hydroelectric dam several miles upriver from Paute. When completed in 2007, the 180-MW Mazar plant will act as a secondary holding reservoir for Paute, reducing sediment buildup and increasing production capacity during the dry season. Another large hydroelectric facility is the planned San Francisco project, downstream from the existing Agoyan plant on the Pastaza River. The San Francisco project, owned by Hidropaute, is a run-of-river style plant, diverting water through a 7.5-mile, underground channel. Brazilian engineering firm Odebrech expects to finish the San Francisco plant by 2007.

Conventional Thermal

Most of Ecuador's conventional thermal generating capacity is diesel-fired, supplied by imports and domestic refineries. Many of Ecuador's diesel power plants are old and inefficient, and often cannot meet electricity demand during the dry season. There have been efforts to increase gas-fired capacity in the country, especially through integrated projects such as the Machala plant. However, financial problems faced by the operators of conventional thermal plants continue to deter private investment.

Profile

Country Overview

Chief of State/Head of Government	President Alfredo Palacio
Location	Western South America, bordering the Pacific Ocean at the Equator, between Colombia and Peru
Independence	24 May 1822 (from Spain)
Population (2005E)	13,363,593
Languages	Spanish (official), Amerindian languages (especially Quechua)
Religion	Roman Catholic 95%, other 5%
Ethnic Group(s)	Mestizo (mixed Amerindian and white) 65%, Amerindian 25%, Spanish and others 7%, black 3%

Economic Overview

Currency	US Dollars (USD)
Inflation Rate (2004E, 2005E, 2006F)	2.8%, 2.4%, 4.5%
Gross Domestic Product (GDP, 2005)	$32 billion
Real GDP Growth Rate (2004E, 2005E, 2006F)	6.9%, 2.5%, 3.6%
Unemployment Rate (2005E)	11.2%
External Debt (2004E)	$17.01 billion
Exports (2005E)	$9.7 billion
Exports - Commodities	petroleum, bananas, cut flowers, shrimp
Exports - Partners (2004E)	US 48.3%, Colombia 5.5%, Germany 4.8%
Imports (2005E)	$9.0 billion
Imports - Commodities	vehicles, medicinal products, telecommunications equipment, electricity
Imports - Partners (2004E)	US 24.5%, Colombia 12.7%, Venezuela 8.3%, Brazil 5.8%, Chile 4.9%, China 4.8%, Japan 4.3%
Current Account Balance (2005E)	-$430 million

Energy Overview

Proven Oil Reserves (January 1, 2006E)	4.6 billion barrels
Oil Production (2005E)	538.7 thousand barrels per day, of which 99% was crude oil.
Oil Consumption (2005E)	162.2 thousand barrels per day
Net Oil Exports (2005E)	376.5 thousand barrels per day
Crude Oil Distillation Capacity (January 1, 2006E)	176 thousand barrels per day
Proven Natural Gas Reserves (January 1, 2006E)	0.3 trillion cubic feet

Natural Gas Production (2003E)	1.8 billion cubic feet
Natural Gas Consumption (2003E)	1.8 billion cubic feet
Recoverable Coal Reserves (2003E)	26.5 million short tons
Coal Production (2003E)	None
Coal Consumption (2003E)	None
Electricity Installed Capacity (2003E)	3.2 gigawatts
Electricity Production (2003E)	11.3 billion kilowatt hours
Electricity Consumption (2003E)	10.6 billion kilowatt hours
Total Energy Consumption (2003E)	0.4 quadrillion Btus*, of which Oil (81%), Hydroelectricity (19%), Natural Gas (0%), Coal (0%), Nuclear (0%), Other Renewables (0%)
Total Per Capita Energy Consumption (2003E)	29.9 million Btus
Energy Intensity (2003E)	8,701.4 Btu per $2000-PPP**

Environmental Overview

Energy-Related Carbon Dioxide Emissions (2003E)	23.7 million metric tons, of which Oil (92%), Natural Gas (8%), Coal (0%)
Per-Capita, Energy-Related Carbon Dioxide Emissions (2003E)	1.8 metric tons
Carbon Dioxide Intensity (2003E)	0.5 Metric tons per thousand $2000-PPP**
Environmental Issues	deforestation; soil erosion; desertification; water pollution; pollution from oil production wastes in ecologically sensitive areas of the Amazon Basin and Galapagos Islands
Major Environmental Agreements	party to: Antarctic-Environmental Protocol, Antarctic Treaty, Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands signed, but not ratified: none of the selected agreements

Oil and Gas Industry

Organization	State-owned Petroecuador controls a large share of crude oil production. However, the sector is open to private operators, including both foreign and domestic companies.
Major Oil/Gas Ports	Balao, Esmeraldas.
Foreign Company Involvement	Largest foreign producers include Occidental Petroleum, Andes Petroleum, Repsol-YPF, Agip.
Major Oil Fields (production, bbl/d)	Shushufindi (51,600), Eden Yutui (51,100), Sacha (41,400), Dorine (33,300), Villano (27,700), Palo Azul (22,700)
Major Pipelines (capacity)	Sistema Oleducto Trans-Ecuatoriano (400,000 bbl/d); Oleducto de Crudos Pescados (450,000 bbl/d)
Major Refineries (capacity, bbl/d)	Esmeraldas (110,000), La Libertad (46,000), Shushufindi (20,000)

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.
**GDP figures from OECD estimates based on purchasing power parity (PPP) exchange rates.

Links

EIA Links
EIA - Historical Energy Data on Ecuador

U.S. Government
CIA World Factbook - Ecuador
U.S. Embassy in Quito, Ecuador
U.S. State Department Background Notes on Ecuador
U.S. State Department's Consular Information Sheet - Ecuador

General Information
Information on Ecuador from the Latin America Network Information Center (LANIC)
International Monetary Fund (IMF) on Ecuador
International Energy Agency (IEA) on Ecuador
International Newspapers Online: Ecuador
LatinWorld's section on Ecuador
World Bank on Ecuador

Associations and Institutions
Andean Community (Energy Integration)
ARPEL, Regional Association of Oil and Natural Gas Companies in Latin America and the Caribbean
The Latin American Integration Association (ALADI)

Foreign Government Agencies
Banco Central del Ecuador (Central Bank)
Fondo de Solidaridad
Instituto Nacional de Estadística y Censos (National Statistical Office)
Ministry of Energy and Mines

Oil and Natural Gas
Petroecuador
Repsol-YPF
OCP

Electricity
Compania Nacional Transmision Electrica (Transelectric S.A.)
Consejo Nacional de Electricidad (CONELEC)
Elecaustro
Emelnorte S.A.
Empresa Electrica Quito S.A.
Empresa Elecutectrica Regional del Sur S.A.
Hidropaute S.A.
Noble Energy Incorporated
Odebrecht
Termopichincha S.A.
The Regional Electric Integration Commission of Latin America (CIER)

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